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true for one region may be far from true in another. For example, *Shepherdia canadensis*, *Artemisia canadensis*, and *Pellaea atropurpurea* are cited as calcicoles. In the Chicago region, only the latter is commonly a calcicole, and it is also a silicicole. It is doubtful too if the chemical theory can account for the prevalence of alpine plants in bogs, a phenomenon readily explained by the current theories.—HENRY C. COWLES.

Ecological notes from New Zealand.—Some of COCKAYNE'S[4] brief papers should be noticed here. *Coprosma Baueri* is found to show a striking case of leaf variation. In the usual natural habitat the leaves are fleshy and have margins so recurved as to be called "rolled;" in shade the leaves are much larger and quite flat. An accompanying photograph shows how striking is the variation. The second paper discusses the supposed finding of a seashore Celmisia in the mountains; the two forms are very similar, but COCKAYNE believes, as everyone must in these days, that the court of last resort in the determination of the validity of species is no longer the herbarium but the experimental garden. The Poor Knights Islands are small precipitous islands exposed to the open sea and never before visited by a naturalist. The scrub formation, in which *Suttonia divaricata* dominates, differs from any allied New Zealand formation; the luxuriance of the arborescent plants is very remarkable in view of the great exposure of the islands. A Carmichaelia, known previously from but one place and that far away, probably attests that the species was once widespread. In another paper, COCKAYNE[5] has added another to the long list of probable mutants observed in nature. This case is of special interest because the mutation is in a plant well known in the region, and is too conspicuous to be overlooked. *Leptospermum scoparium* is one of the commonest weeds of New Zealand, and possesses white or sometimes pink flowers. The "mutant" consists of a crimson-flowered form, and it is noteworthy that the foliage is so much darker that it is easy to pick out the mutant in the seedling condition. In connection with COCKAYNE'S studies it should be noted that he has published a large amount of ecological literature in popular form in the *Lyttelton Times*, a Christchurch paper. These essays have been well written and must have done much to interest New Zealanders in the remarkable vegetation of their country, and to induce them to take steps to preserve this vegetation in large part through the medium of government reservations.—HENRY C. COWLES.

Plant-breeding in the tropics.—LOCK[6] has published a third report on hybridization experiments carried on at Peradeniya, Ceylon, giving in detail the results of extensive crosses between various races of Indian corn. In almost every regard the important early work of CORRENS on this species is confirmed, it being again demonstrated that yellow endosperm is dominant over white, starchy over sugary, blue aleurone layer over white, and red pericarp over white. The latter being a character of the mother plant does not appear as "xenia." The same seems to be true, to some extent at least, with regard to the indent character of the grains. It is not clear from the experiments that this character segregates after the Mendelian fashion, but it is pointed out by the author that a certain looseness in the method of pollination used makes it impossible to interpret the behavior of this character. With respect to height of plant, all cases tested seem to indicate that there is a blend in F_1 and no segregation in later generations. The most important contribution to knowledge is the complete confirmation of the view that failure of the Mendelian ratio in the case of blue vs. white aleurone layer is due to defective dominance and not to imperfect segregation. In such crosses the blue appears in ratios almost invariably below expectation, sometimes considerably below, but subsequent breeding of the whites from such a cross shows that enough of them are heterozygotes to make up the deficiency in the number of blue grains in the preceding generation. The author speaks of the "dominance" of the white aleurone layer in this case, but this is not correct, for if the white were really dominant in the accepted sense, the crossing of these white heterozygotes with pure whites would give only white offspring; but this was the method used to demonstrate their heterozygote nature by showing that such a cross produces a considerable proportion of blues. The failure of dominance of blue in these cases is rather to be spoken of as "latency," and the possibility that there may be another factor involved, as in certain other known cases of latency (invisibility), is suggested and needs investigation.—G. H. SHULL.

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[4] COCKAYNE, L., On a specific case of leaf variation in *Coprosma Baueri* Endl.; on the supposed Mount Bonpland habitat of *Celmisia Lindsayi* Hook. f.; Notes on a brief botanical visit to the Poor Knights Islands. Trans. N. Z. Inst. **38**:341–360. 1906.

[5] COCKAYNE, L., On the sudden appearance of a new character in an individual of *Leptospermum scoparium*. New Phytologist **6**:43–46. 1907.

[6] LOCK, R. H., Studies in plant breeding in the tropics. III. Experiments with maize. Ann. Roy. Bot. Gard. Peradeniya **3**: 95–184. 1906.

Anatomy of Lobeliaceae.—The anatomy of the Lobeliaceae has been described by YDRAC,[7] who reaches the conclusion that JUSSIEU'S classification is more natural than that of BENTHAM and HOOKER, and that the family ought to be placed between the Compositae and Campanulaceae, instead of representing only a tribe of the latter. Many genera and species have been examined, and the author has not confined himself to the stem and leaf alone, but gives also many points of interest about the root structure, and a special chapter is devoted to the medicinal species. Characteristic of the family is the occurrence of articulated laticiferous ducts, which are located in the leptome and accompany this tissue in the roots, the stem, and the leaf; but the aquatic *Lobelia Dortmanna* is destitute of latex. None of the Lobeliaceae possesses bicollateral mestome strands, while these are frequently observed in the Campanulaceae and Compositae (Liguliflorae); the mechanical tissue is only represented by collenchyma in the stem, there being no stereomatic pericycle. The leaves are bifacial so far as concerns the distribution of the stomata (on the dorsal face), but the chlorenchyma is mostly of a homogene-

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[7] YDRAC, F. L., Recherches anatomiques sur les Lobeliacées. Thesis. pp. 165. Lons-Le-Saunier. 1905.